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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,067	07/09/2003	Toshifumi Kojima	040894-5940	7994
9629	7590	09/06/2007		
MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004			EXAMINER LAM, CATHY FONG FONG	
			ART UNIT 1775	PAPER NUMBER
			MAIL DATE 09/06/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/615,067

Applicant(s)

KOJIMA ET AL.

Examiner

Cathy Lam

Art Unit

1775

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 5-7 and 11-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5-7 and 11-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

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In view of the amendment and remarks filed on June 07, 2007, the pending claims continue to be unpatentable as following:

***Claim Rejections - 35 USC § 102***

1. Claims 5-6 and 17 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Yamamoto et al (US 6916873).

Yamamoto discloses a liquid thermosetting resin composition that is used for filling via holes and/or through holes in printed wiring boards (col 1 L 14-18).

The printed wiring boards comprise insulating layers, via holes and/or through holes, and conductive circuit patterns (col 1 L 39-45). The via holes and/or through holes are formed in the thickness of the insulating layers and plated with copper. The thermosetting resin composition is used to fill the via holes for providing conductive connection between the conductive circuit patterns (col 10 L 55-60 & Figs. 1(a)-1(g)).

The liquid thermosetting resin composition is comprised of (A) an epoxy resin, (B) a curing catalyst, (C) a filler and (D) a coupling agent (col 2 L 63-65 & col 3 L 6-8).

The curing catalyst (B) can be dicyandiamide (col 6 L 64 & col 7 L 17-18). The filler (C) are inorganic fillers which can either be conductive or non-conductive particles (col 8 L 10-16). Depending on the type of fillers used, the average filler size is 1-2  $\mu\text{m}$  for spherical fine filler and 4-10  $\mu\text{m}$  for ground filler (col 7 L 64-col 8 L 4).

The coupling agent (D) can be a silane coupling agent which comprises an urea end group (col 9 L 6-11).

The prior art is silent about the dicyandiamide is for reducing deterioration in adhesive strength between the resin composition and the conductor layer. Since

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Yamamoto teaches the same dicyandiamide as the present invention, it would be inherent that Yamamoto's dicyandiamide curing catalyst possesses the same function.

***Claim Rejections - 35 USC § 103***

2. Claims 7, 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto et al (US 6916873).

Yamamoto teaches the present invention but is silent about the size of the via hole or through hole, the dicyandiamide is in powder format and the specific type of urea compound used.

In view of Yamamoto's teaching, one skill in the art would choose a desired via hole size because choosing a workable size is just a matter of design choice.

Regarding to the dicyandiamide curing agent in powders, dendrites or flakes format, since applicant has not stated any advantages of using such, the examiner is taking the position that the prior art (even in different physical format) would perform the same job.

Regarding to the specific type of urea compound, the examiner is taking the position that one skill in the art would choose the claimed urea compounds because finding a workable material involves only routine experimentations.

***Response to Arguments***

3. Applicant's arguments filed on June 07, 2007 have been fully considered but they are not persuasive. Applicant in the remarks traverses the art rejections and raises the following issues:

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A. The silane coupling agent of Yamamoto does not correspond to the claimed curing catalyst. In contrast, the present invention is directed to the filler particles may be subjected to surface treatment with a silane coupling agent.

B. The silane coupling agent is a liquid, whereas the claimed curing catalyst is used to cured the resin and urea is powder.

In respond to the above issues:

A. The silane coupling agent in Yamamoto was NOT used as a curing catalyst. The silane coupling agent was used to enhance the wettability of the filler in the liquid thermosetting resin (col 5 L 34-41). The coupling agent can either be added into the liquid composition or onto the surface of the filler as surface pretreatment (col 8 L 58-62).

B. The silane coupling agent disclosed in Yamamoto are organic compound, it improves the wettability of the filler and decreases the viscosity of the thermosetting resin composition (col 9 L 6-14 & col 5 L 36-41). Clearly, the silane coupling agent is a liquid. There is no clear description in the specification that the urea is a powder.

In respond to applicant's issues, Yamamoto continues to anticipate and/or obvious over the present invention. Thus, the art rejections sustain.

### ***Conclusion***

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.



Cathy Lam  
Primary Examiner  
Art Unit 1775

cfl  
August 30, 2007